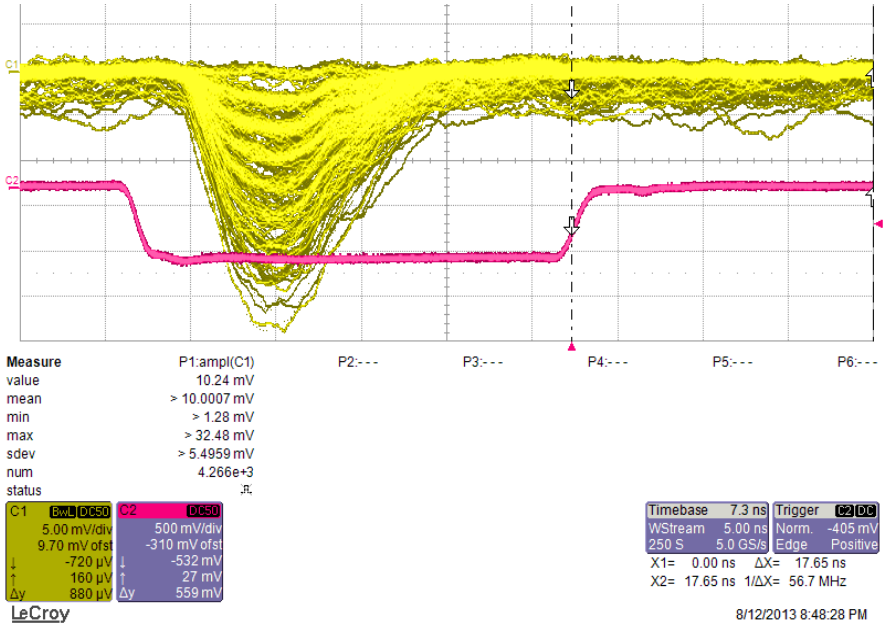
How to select (group) sensors for a single tower?

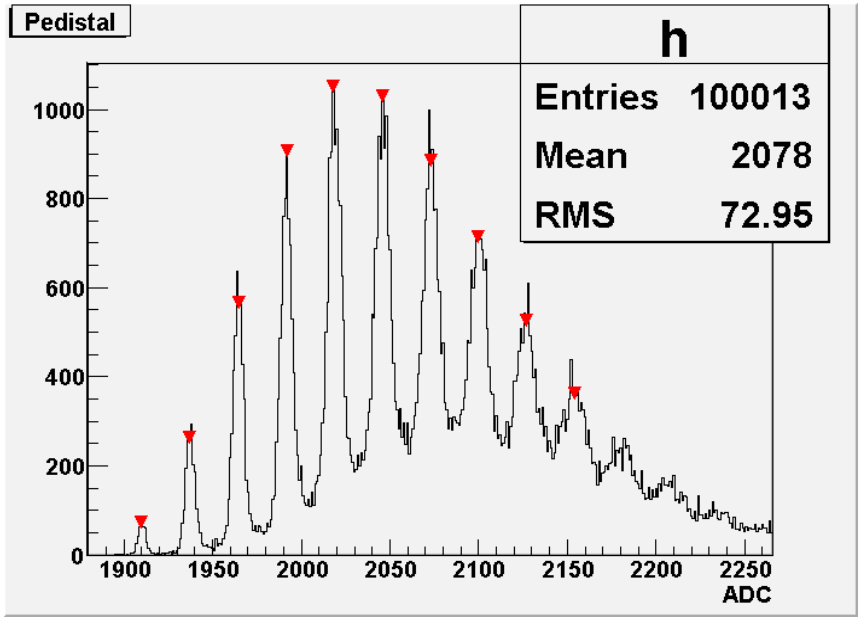
(gain, PDE, temperature dependence, dark noise rate, etc.)

(gain, and T dependence adjusted/compensated at FEE)

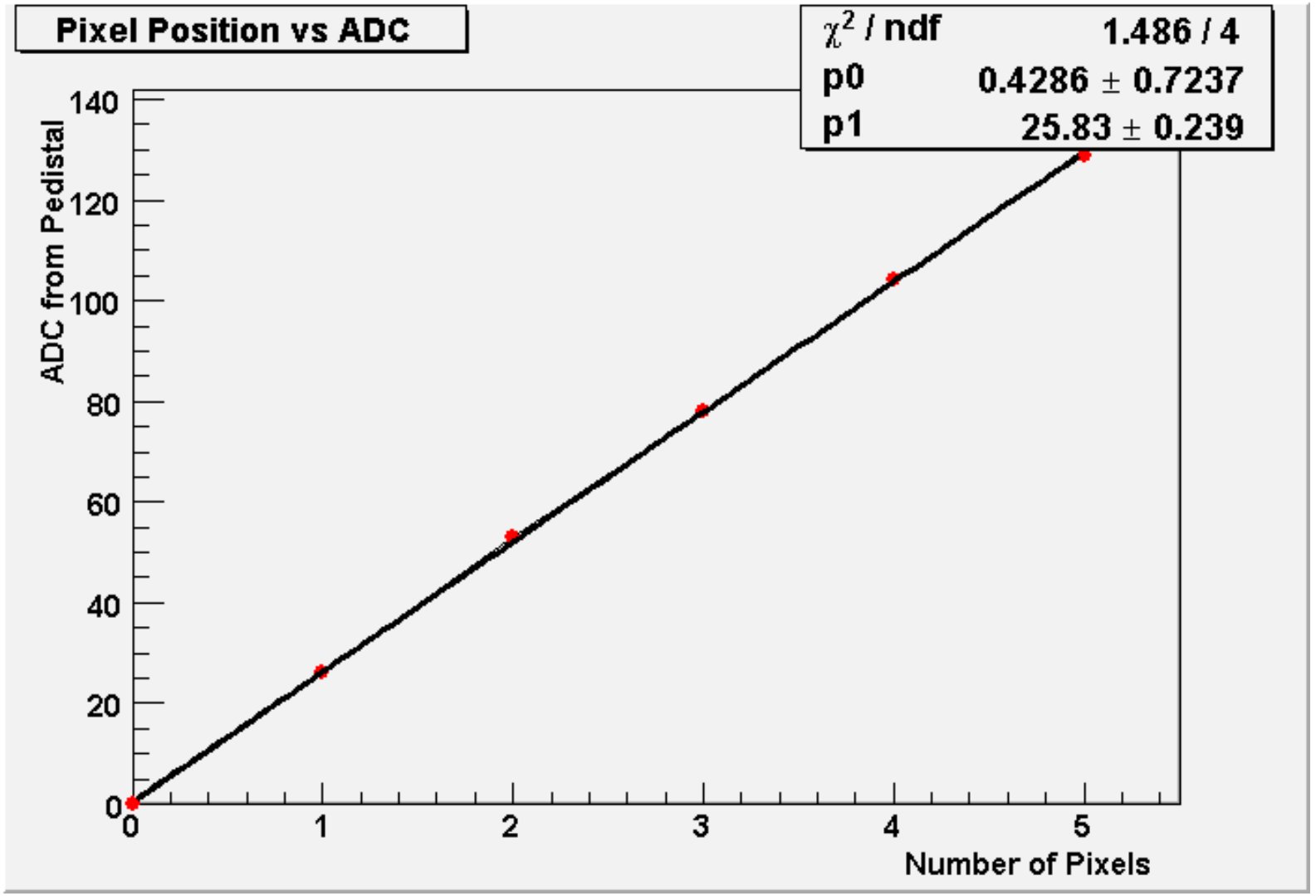
b) PDE, what actually do we measure with the test setup?

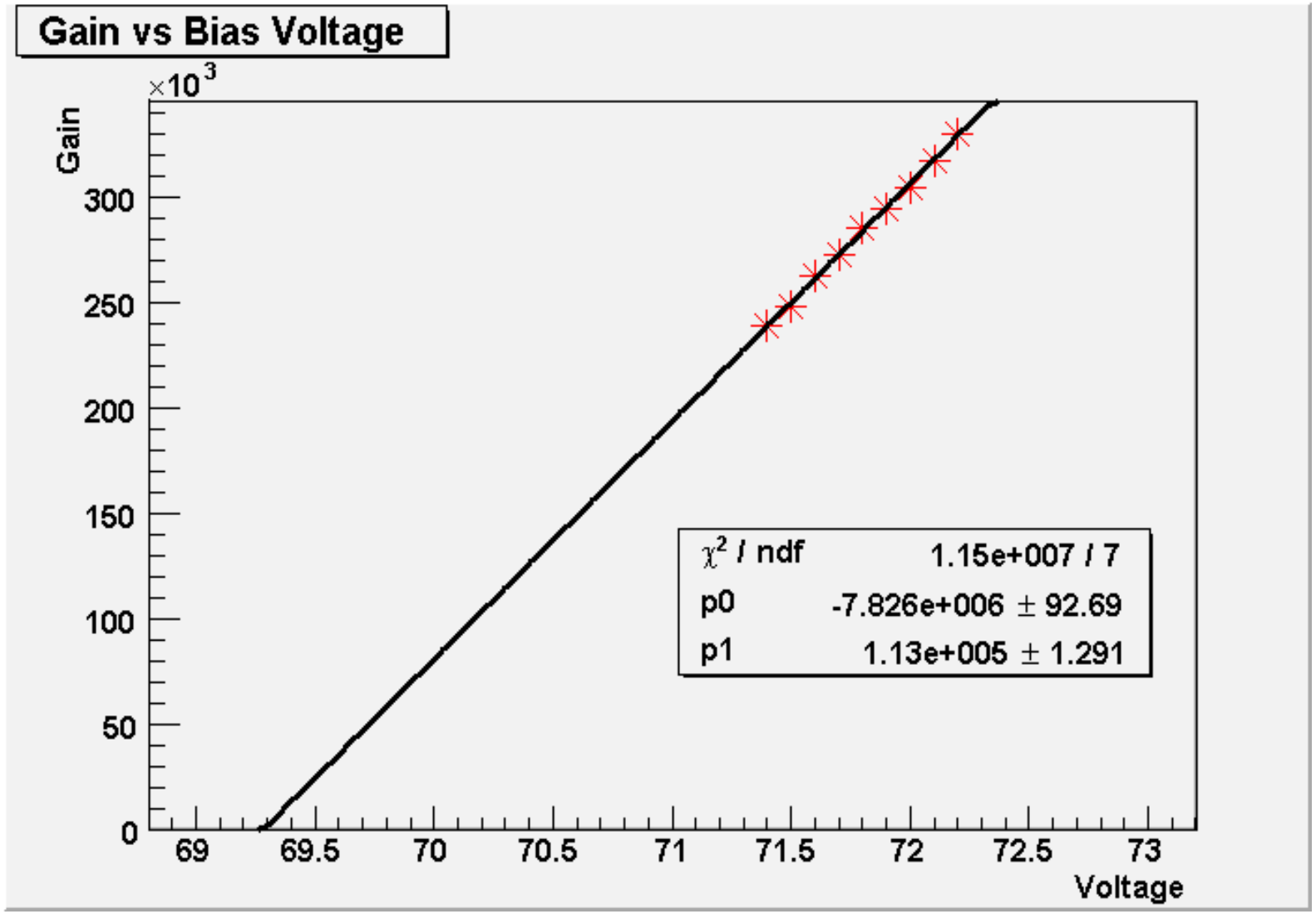
c) Choice of optimal bias voltage?

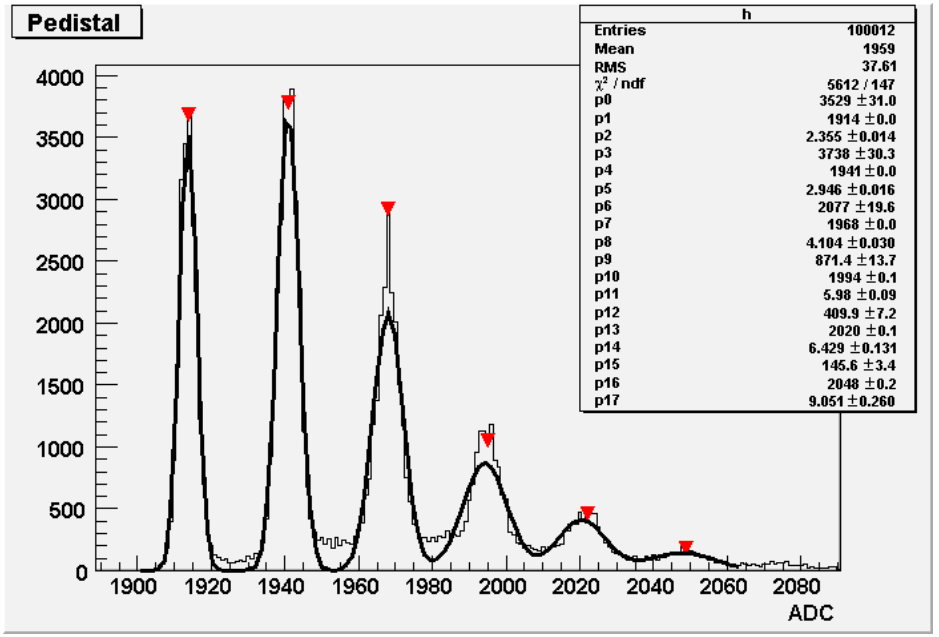


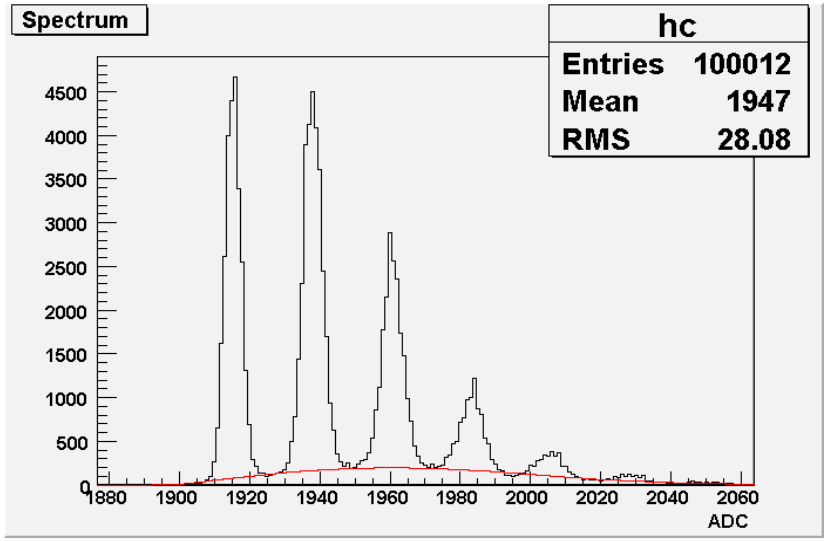


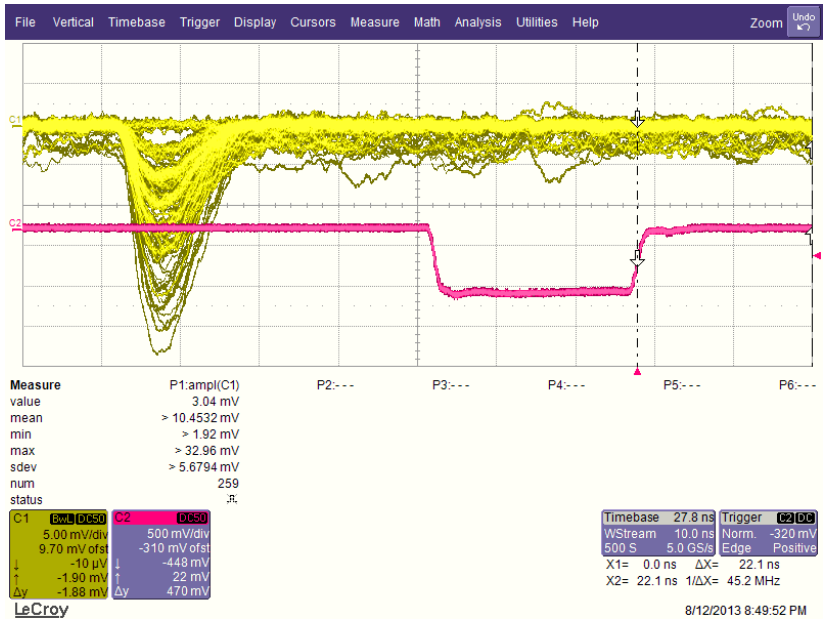
	GLUEX sensors mass testing	Our Sensors
Gate	~120ns	20ns
Breakdown Voltage	~70.4 V	~ 69.3V
Gain	5*10^5 at 1V above breakdown	Same at 3V above breakdown

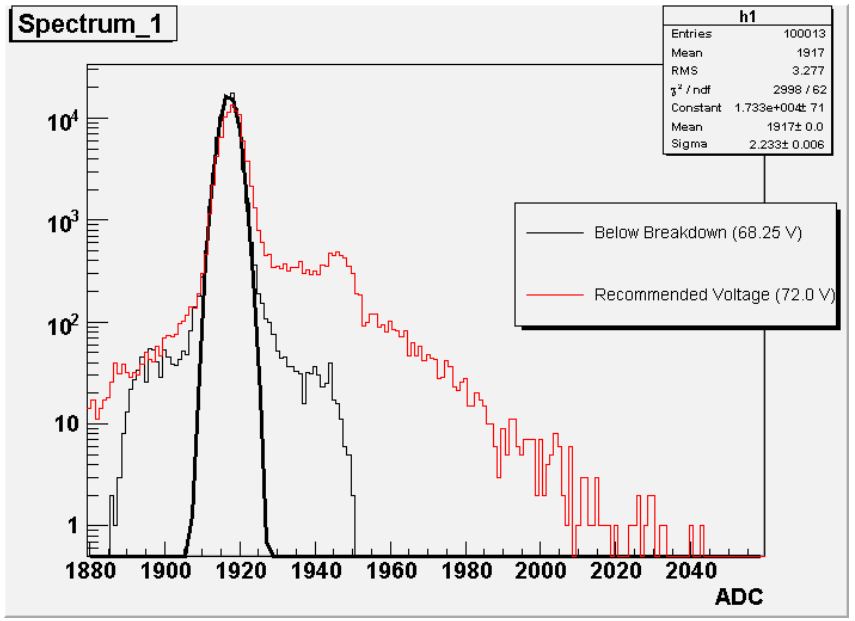

Pixel Position vs ADC
χ^2 / ndf 1.486 / 4
p0 0.4286 ± 0.7237
p1 25.83 ± 0.239
ADC from Pedistal
0
20
40
60
80
100
120
140
0
1
2
3
4
5
Number of Pixels

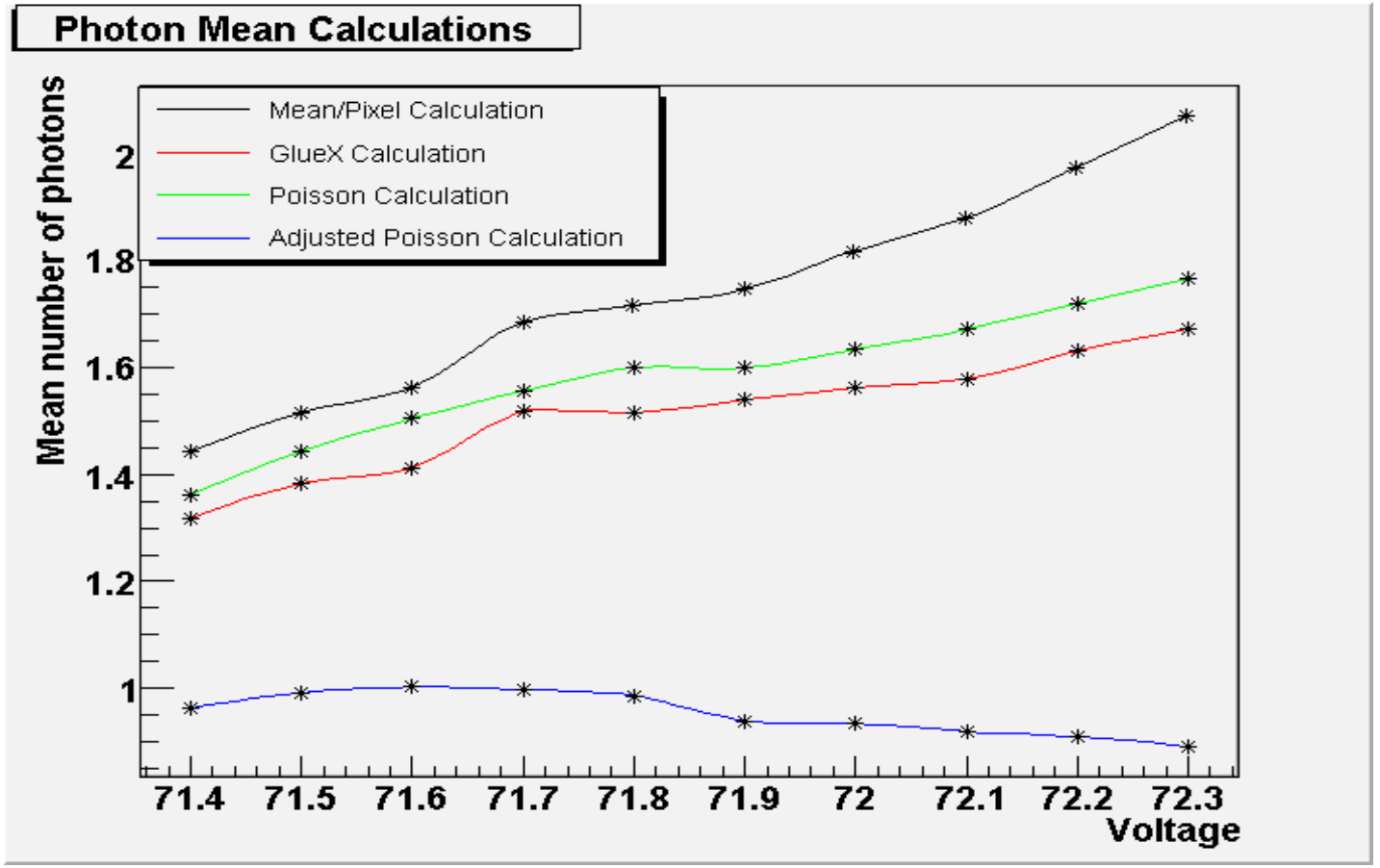

Gain vs Bias Voltage
×10^3
Gain
300
250
200
150
100
50
0
69
69.5
70
70.5
71
71.5
72
72.5
73
Voltage
χ² / ndf 1.15e+007 / 7
p0 -7.826e+006 ± 92.69
p1 1.13e+005 ± 1.291

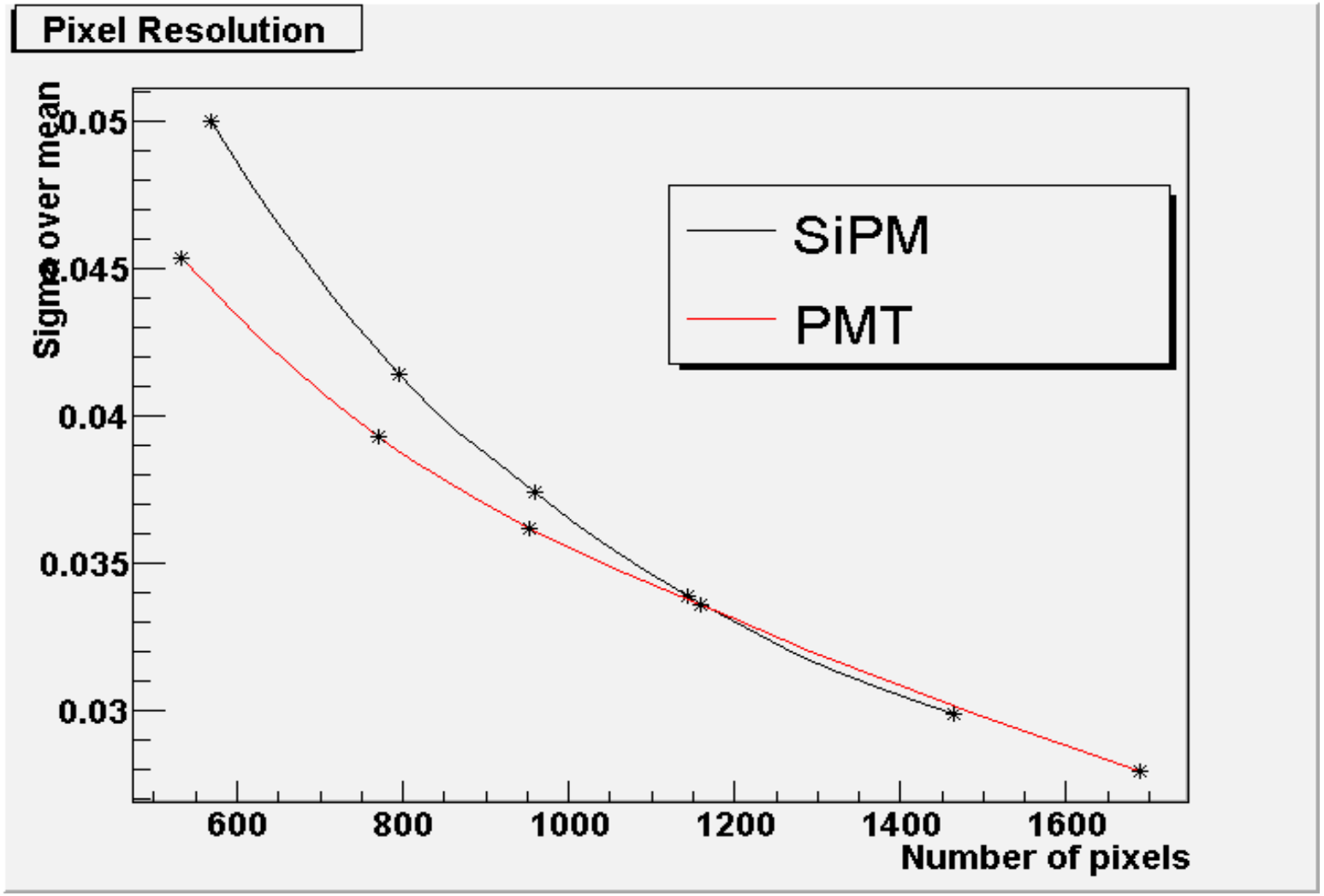

Pedistal
h
Entries 100012
Mean 1959
RMS 37.61
χ² / ndf 5612 / 147
p0 3529 ±31.0
p1 1914 ±0.0
p2 2.355 ±0.014
p3 3738 ±30.3
p4 1941 ±0.0
p5 2.946 ±0.016
p6 2077 ±19.6
p7 1968 ±0.0
p8 4.104 ±0.030
p9 871.4 ±13.7
p10 1994 ±0.1
p11 5.98 ±0.09
p12 409.9 ±7.2
p13 2020 ±0.1
p14 6.429 ±0.131
p15 145.6 ±3.4
p16 2048 ±0.2
p17 9.051 ±0.260
4000
3500
3000
2500
2000
1500
1000
500
0
1900
1920
1940
1960
1980
2000
2020
2040
2060
2080
ADC


Spectrum
hc
Entries 100012
Mean 1947
RMS 28.08
4500
4000
3500
3000
2500
2000
1500
1000
500
0
1880 1900 1920 1940 1960 1980 2000 2020 2040 2060
ADC


File Vertical Timebase Trigger Display Cursors Measure Math Analysis Utilities Help Zoom
Measure P1:ampl(C1) P2:--- P3:--- P4:--- P5:--- P6:---
value 3.04 mV
mean > 10.4532 mV
min > 1.92 mV
max > 32.96 mV
sdev > 5.6794 mV
num 259
status
C1 5.00 mV/div 9.70 mV ofst -10 µV -1.90 mV -1.88 mV
C2 500 mV/div -310 mV ofst -448 mV 22 mV 470 mV
Timebase 27.8 ns WStream 10.0 ns 500 S 5.0 GS/s
Trigger Norm. -320 mV Edge Positive
X1= 0.0 ns ΔX= 22.1 ns
X2= 22.1 ns 1/ΔX= 45.2 MHz
LeCroy
8/12/2013 8:49:52 PM


Spectrum_1
h1
Entries 100013
Mean 1917
RMS 3.277
χ² / ndf 2998 / 62
Constant 1.733e+004± 71
Mean 1917± 0.0
Sigma 2.233± 0.006
Below Breakdown (68.25 V)
Recommended Voltage (72.0 V)
10⁴
10³
10²
10
1
1880 1900 1920 1940 1960 1980 2000 2020 2040
ADC


Photon Mean Calculations
Mean/Pixel Calculation
GlueX Calculation
Poisson Calculation
Adjusted Poisson Calculation
Mean number of photons
2
1.8
1.6
1.4
1.2
1
71.4
71.5
71.6
71.7
71.8
71.9
72
72.1
72.2
72.3
Voltage


Pixel Resolution
Sigma over mean
0.05
0.045
0.04
0.035
0.03
600
800
1000
1200
1400
1600
Number of pixels
SiPM
PMT